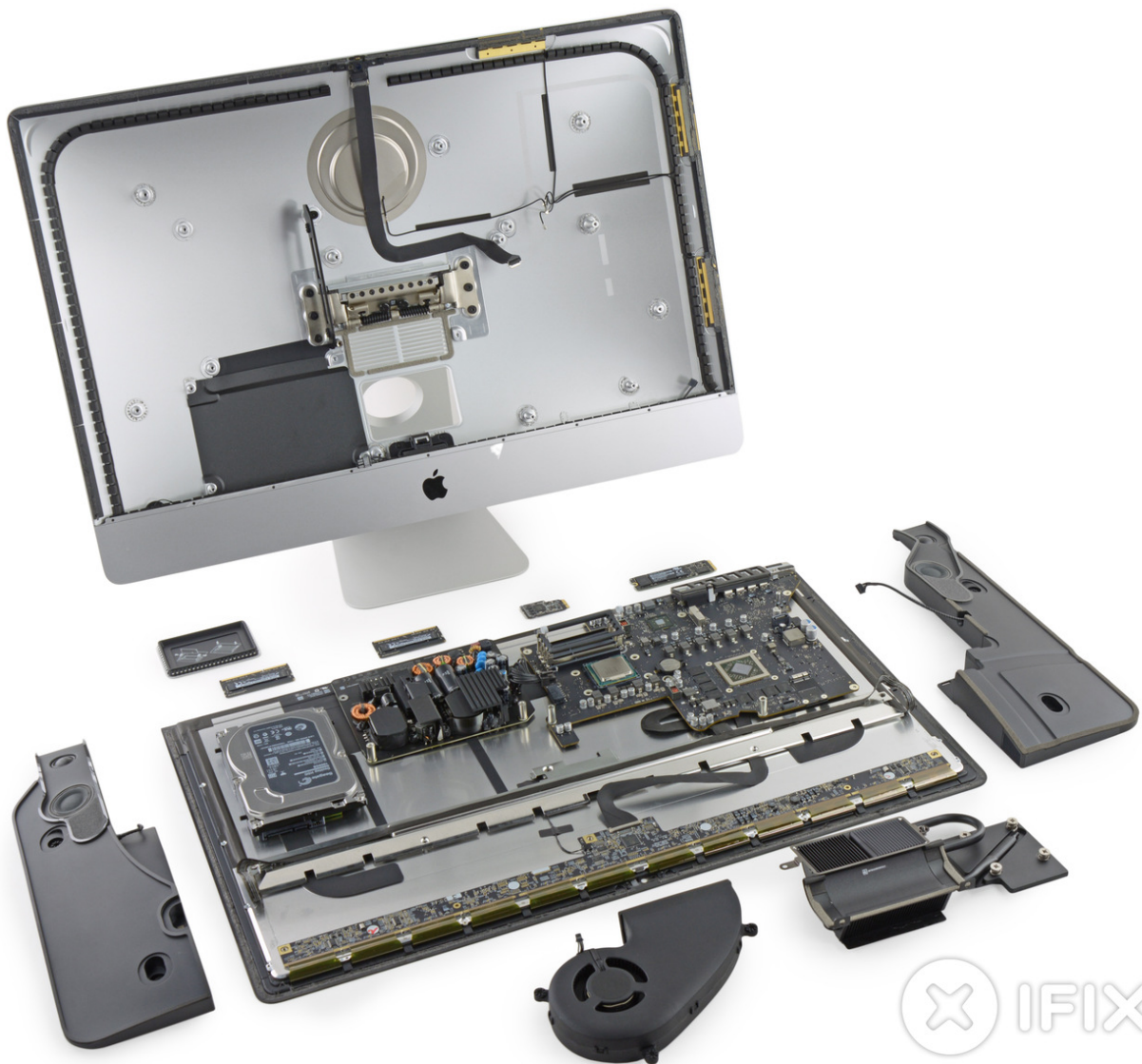




# iMac Intel 27" Retina 5K Display Teardown

iMac Intel 27" Retina 5K Display on October 17, 2014.

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## INTRODUCTION

Think of the most colorful and radiant display you've ever seen. Now, discard that memory and stare at Apple's newest iMac Intel 27" with Retina 5K Display. We're not talking 1080p or 4K, we're talking about 5K—millions and millions of pixels on a 27-inch display. Will the addition of a high-resolution display affect the repairability of the newest iMac Intel 27"? Let's find out!

Follow us on [Facebook](#), [Instagram](#), or [Twitter](#) for the latest teardown news.

[video: <https://www.youtube.com/watch?v=TLJN4S5nJ6E>]

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### TOOLS:

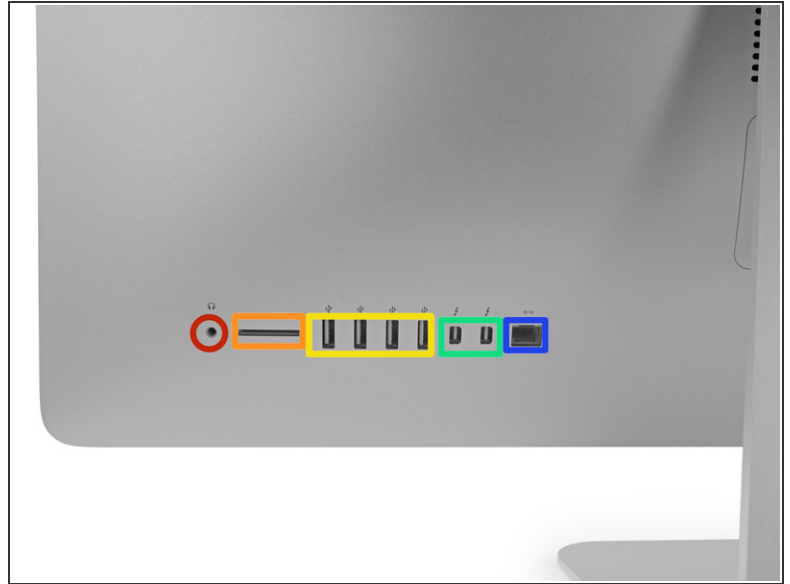
- [iMac Intel 27" \(EMC 2546, 2639, 2806\)](#)  
[Adhesive Strips](#) (1)
  - [Spudger](#) (1)
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## Step 1 — iMac Intel 27" Retina 5K Display Teardown



- How do you herd together 14.7 million pixels? You can ask nicely, or you can brandish some heavy-duty hardware. Inside the Retina 5K iMac:
  - 3.5 GHz quad-core Intel Core i5 processor, with Turbo Boost up to 3.9 GHz
  - 8 GB (2x4 GB) of 1600 MHz DDR3 RAM
  - AMD Radeon R9 M290X graphics processor with 2 GB of GDDR5 video memory
  - 802.11ac Wi-Fi + Bluetooth 4.0
  - PCIe-based SSD storage and SATA hard drive

## Step 2



- Not one to waste a good model number on just a single device, Apple [again recycles](#) A1419.
  - ❗ For a unique identifier, this is EMC 2806.
- At the rear of the iMac, we find a plethora of I/O ports and a lone SDXC card slot:
  - Headphone jack / Optical digital audio output
  - SDXC card slot
  - Four USB 3.0 ports
  - Two Thunderbolt 2.0 ports
  - Gigabit ethernet port

## Step 3



- Fixers rejoice! The iMac Intel 27" Retina 5K Display retains the familiar, easily accessible RAM upgrade slot from iMacs of yore.
- For those who require assistance replacing their RAM modules, Apple has attempted to provide some direction—that you get to see after you're halfway through the process.
- ① For anyone who would rather be guided by glorious high-resolution images and lovingly crafted text, that's [also available](#).



## Step 4



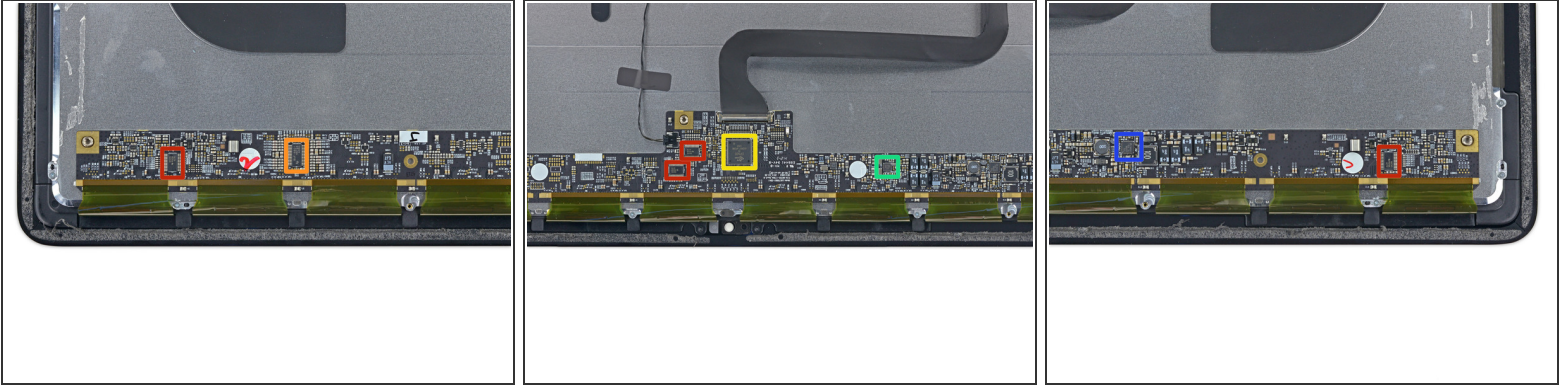
- We're pretty adept at slicing open iMacs with our ever-so-fancy [iMac Opening Tool](#) and our noble [Plastic Card](#).
- While the procedure still requires a steady hand and a willingness to replace the custom-cut, two-sided adhesive tape when you're done, it's otherwise pretty straightforward, and unchanged from previous models.
- With the adhesive tape gone, we get our first peek at the hardware inside the Retina 5K iMac.

## Step 5



- The first order of business is finding out whether this 5K display runs on actual magic, or something more susceptible to dissection.
- ❗ This particular display was manufactured by LG Display. (So, magic is looking less likely.)
- With a few twists of our screwdriver, a very long, very thin display board is revealed.

## Step 6



- Let's take a look at the hardware that allows 14.7 million pixels with a resolution of 5120 x 2880 on a 27-inch display:
  - Texas Instruments [NH245](#) 8-Bit Dual-Supply Bus Transceiver
  - Texas Instruments [BUF16821](#) Programmable Gamma-Voltage Generator and Vcom Calibrator
  - Parade Technologies DP665 LCD [Timing Controller](#)
    - ⓘ We assume this is an Apple modified version of the [DP663](#) LCD Timing Controller
  - Texas Instruments [TPS65270](#) Monolithic Dual Synchronous Buck Regulator
  - Texas Instruments [TPS65168](#) High Resolution Fully Programmable LCD Bias IC for TV

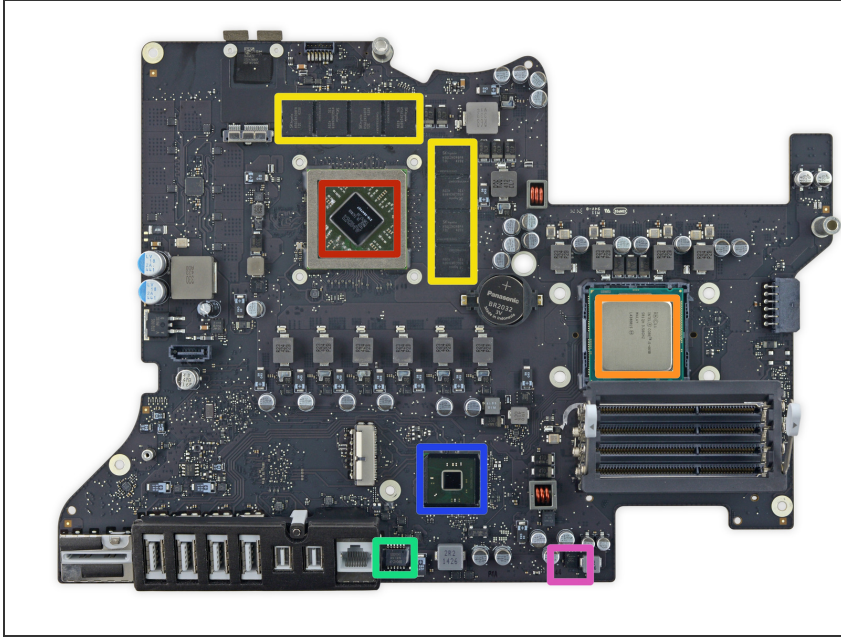
## Step 7



- Barring the new display, the hardware inside the iMac Intel 27" Retina 5K Display looks much the same as [last year's 27" iMac](#).
- In fact, as we dive in deeper, we realize it is very nearly [exactly](#) the same.
  - ❗ We would have documented the logic board removal, but we already have! We'll be following [last year's logic board guide](#)—check it out and head back here while we skip ahead.
- And after following the guide to the letter, we've got our findings on the differences inside:
  - The Retina 5K's display data cable is slightly wider—to support those extra pixels.

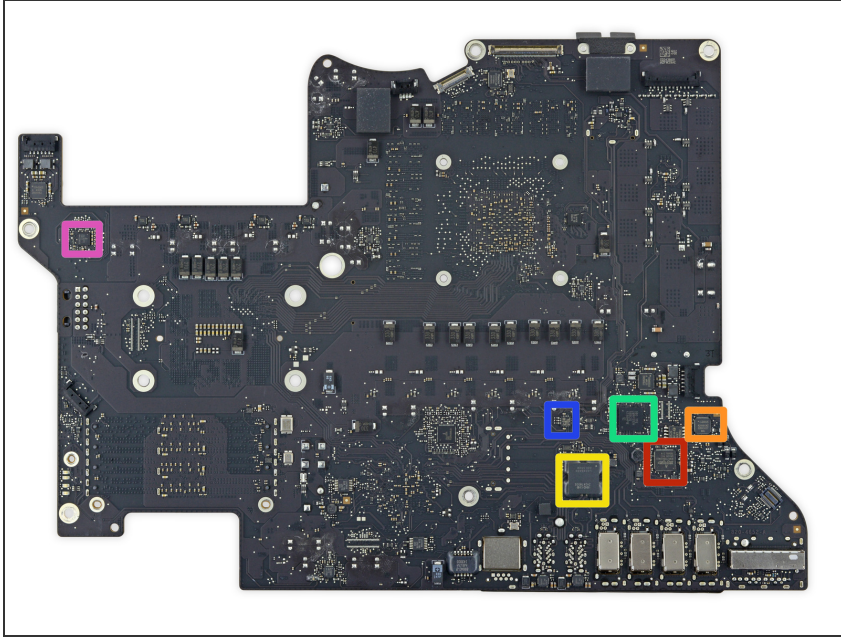


## Step 8



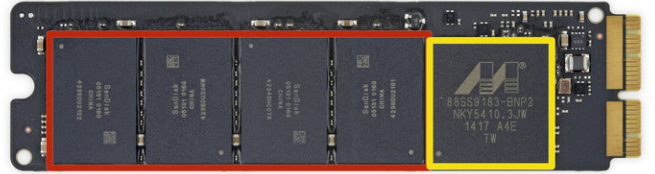
- Let's see what ICs this unsurprisingly familiar logic board is packing:
  - AMD Radeon [R9 M290X](#) GPU
  - Intel Core [i5-4690](#) Processor
    - ⓘ Just like last year, the CPU is not soldered to the logic board, and can be easily [replaced](#) (we just left it in the socket for the picture).
  - SK Hynix [H5GC2H24BFR](#) 256 MB GDDR5 SGRAM (256 MB x 8 modules = 2 GB total)
  - Delta Electronics 8904CF 143003
  - Intel DH82Z87 (Z87) Platform Controller Hub
  - Fairchild Semiconductor DE32GV

## Step 9



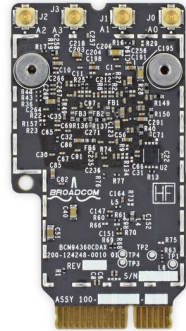
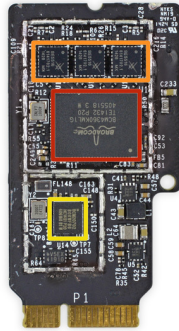
- Front side of logic board:
  - Broadcom BCM5776 Gigabit Ethernet Controller
  - Cirrus Logic 4206BCNZ Audio Controller
  - Intel [DSL5520](#) Thunderbolt 2 Controller
  - LMF4S1EH 5BBCIG 47A6HPW
  - Microchip Technology [1428-7 420BE5A BMY](#) System Management Bus (SMBus) Temperature Sensor
  - Intersil [ISL6327](#) Enhanced 6-Phase PWM Controller

## Step 10



- This looks to be the exact same SanDisk PCIe SSD as the one found in the [MacBook Pro 13" Retina Display Late 2013](#).
- Unsurprisingly, we find the exact same ICs:
  - SanDisk 05131 016G 16 GB NAND Flash (four on each side, total of  $8 \times 16 \text{ GB} = 128 \text{ GB}$ )
  - SK Hynix [H5TQ2G63DFR](#) 2 GB DDR3 SDRAM
  - Marvell [88SS91383](#) PCIe SSD Controller

## Step 11

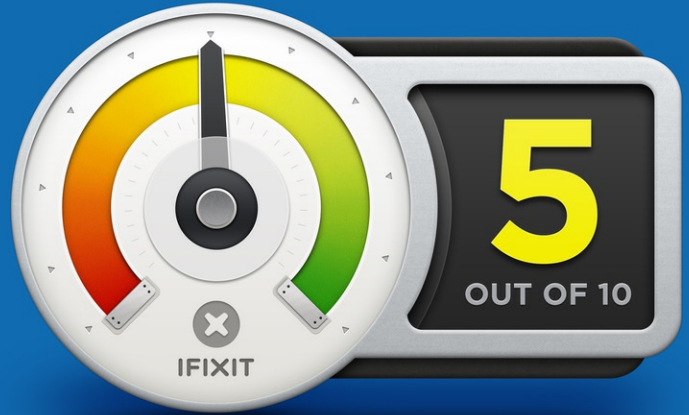


- The AirPort/Bluetooth card, identified by its model number BCM94360CD, is [exactly the same](#) as the one we encountered in last years iMac Intel 27 inch:
  - Broadcom [BCM4360KML1G](#) 5G WiFi 3-Stream 802.11ac Gigabit Transceiver
  - Skyworks [SE5516](#) Dual-Band 802.11a/b/g/n/ac WLAN Front-End Module
  - Broadcom [BCM20702](#) Single-Chip Bluetooth 4.0 HCI Solution with Bluetooth Low Energy (BLE) Support

## Step 12



### REPAIRABILITY SCORE:



- iMac 27" Retina 5K Display Repairability Score: **5 out of 10** (10 is easiest to repair)
- RAM is user-replaceable without opening the case, thanks to the rear access door.
- You can still replace the hard drive and CPU inside this machine, albeit with some adhesive cutting.
- Components are modular and fairly easy to remove.
- The glass and LCD are fused together, and there are no more magnets holding the glass in place.
- You'll have to masterfully peel off the old double-sided sticky tape and apply new tape in order to reseal this iMac into original condition.

To reassemble your device, follow these instructions in reverse order.

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